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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/642,436	08/14/2003	Jeffrey A. Schuster	AERX-071CIP	9902
24353	7590	10/06/2005	EXAMINER	
BOZICEVIC, FIELD & FRANCIS LLP 1900 UNIVERSITY AVENUE SUITE 200 EAST PALO ALTO, CA 94303			STAFIRA, MICHAEL PATRICK	
			ART UNIT	PAPER NUMBER
			2877	

DATE MAILED: 10/06/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b> 10/642,436	<b>Applicant(s)</b> SCHUSTER ET AL.	
	<b>Examiner</b> Michael P. Stafira	<b>Art Unit</b> 2877	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**.      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-55 is/are pending in the application.  
     4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 41-47 is/are allowed.
- 6) ☒ Claim(s) 1-14, 16-23, 26-40, 48-55 is/are rejected.
- 7) ☒ Claim(s) 15, 24 and 25 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
     Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
     Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
     a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |   |  |
|---|--|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. ____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)  | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)            |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>11/24/2003</u> . | 6) <input type="checkbox"/> Other: ____  |

## **DETAILED ACTION**

### ***Specification***

1. The disclosure is objected to because of the following informalities: The specification should indicate after the title all continuing information.

Appropriate correction is required.

### ***Claim Rejections - 35 USC § 112***

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claim 23 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claim 23 it is unclear how a pore (a hole) can comprise of a plurality of pores (holes)?

### ***Claim Rejections - 35 USC § 102***

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

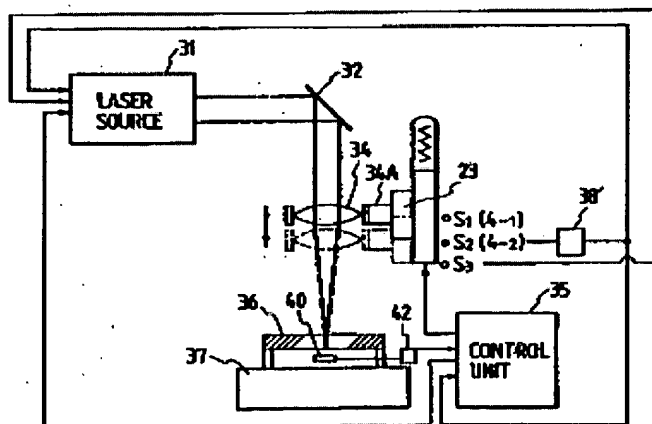
(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

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5. Claims 1-3, 6-9, 12-13, 20-22, 26-33, 36, 38-40, 48, 51-55 are rejected under 35 U.S.C. 102(b) as being anticipated by Inagawa et al. ('280).

**Claim 1**

Inagawa et al. ('280) discloses directing light (Fig. 6a, Ref. 31) onto a sheet of material (Fig. 6a, Ref. 36) in a pore array fabrication position wherein the light having an intensity and a wavelength sufficient to form pores within the sheet (See Abstract); forming a pore array (Forming holes into circuit board) within the sheet (Fig. 6a, Ref. 36) wherein pores formed within the sheet at the locations where the light contacts a surface of the sheet and further wherein the light passes through the pores (See Fig. 6a); detecting the light passing through the pores (Fig. 6a, Ref. 40); and analyzing the detected light to determine if the pores meet a criterion which is a function of one of pore shape (Col. 7, lines 33-43).

**FIG. 6A****Claim 2**

Inagawa et al. ('280) discloses modifying the fabricating based on the whether the criterion is met (Col. 7, lines 20-43).

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**Claim 3**

The reference of Inagawa et al. ('280) further discloses the source of the light is a LASER (Col. 3, lines 61-65).

**Claim 6**

Inagawa et al. ('280) discloses the LASER is selected from the group consisting of a UV LASER (Col. 3, lines 60-65).

**Claim 7**

The reference of Inagawa et al. ('280) further discloses the detecting comprises using a detector selected from the group consisting of a photodiode (Col. 7, lines 20-32), and wherein the analyzing comprises using a system comprising an electronic circuit (Fig. 6a, Ref. 35).

**Claim 8**

Inagawa et al. ('280) further discloses the modifying comprises changing one or more of the intensity, the pulse duration, and the pulse frequency of the directed light (Col. 6-7, lines 59-20).

**Claim 9**

Inagawa et al. ('280) further discloses the modifying comprises reducing the intensity wherein the fabrication method is essentially halted (Col. 7, lines 33-43).

**Claim 12**

Inagawa et al. ('280) further discloses the UV LASER is selected from the group consisting of excimer LASERs (Col. 3, lines 62-63).

**Claim 13**

The reference of Inagawa et al. ('280) further discloses the LASER is a pulsed Excimer

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LASER (Col. 3, lines 60-63).

**Claim 20**

Inagawa et al. ('280) discloses directing light energy (Fig. 6a, Ref. 31) on a surface of a sheet material (Fig. 6a, Ref. 36) in an amount sufficient to create at least one pore in the material (See Abstract); detecting light passing (Fig. 6a, Ref. 40) through the sheet material opposite the surface at which the light energy is directed (See Fig. 6a); and analyzing the detected light to determine at least one criterion of the at least one pore (Col. 7, lines 33-44).

**Claim 21**

Inagawa et al. ('280) further discloses the at least one criterion is selected from the group consisting of pore size and pore shape (Col. 7, lines 33-44).

**Claim 22**

The reference of Inagawa et al. ('280) further discloses discontinuing the direction of light at the at least one location when the at least one pore achieves a predetermined size (Col. 7, lines 33-44).

**Claim 26**

Inagawa et al. ('280) further discloses the light is directed at the plurality of locations and the analyzing is carried out to determine at least one of the criteria selected from the group consisting of whether the pores have been made through the sheet material (Col. 7, lines 33-43).

**Claim 27**

The reference of Inagawa et al. ('280) further discloses discontinuing the directing of light when the analysis determines that the at least one criteria has been met (Col. 7, lines 33-43).

**Claim 28**

Inagawa et al. ('280) discloses the light energy is LASER light (Col. 3, lines 60-65).

**Claim 29**

The reference of Inagawa et al. ('280) further discloses the LASER light is selected from the group consisting of Excimer LASERs (Col. 60-65).

**Claim 30**

Inagawa et al. ('280) discloses a light source (Fig. 6a, Ref. 31) capable of directing light onto the surface of a sheet material (Fig. 6a, Ref. 36) in an amount sufficient to drill a plurality of pores in the sheet material (See Abstract); and a light detector (Fig. 6a, Ref. 40) adapted to be positioned adjacent the sheet material on a side of the sheet material which is opposite the surface at which the light is directed (See Fig. 6a).

**Claim 31**

Inagawa et al. ('280) discloses a means for analyzing light detected to determine at least one criterion of the plurality of pores (Col. 7, lines 33-43).

**Claim 32**

Inagawa et al. ('280) discloses a feedback circuit electrically (Fig. 6a, Ref. 35) connected to said light source (Fig. 6a, Ref. 31) and said light detector (Fig. 6a, Ref. 40), wherein the feedback circuit is adapted to analyze light passing through the sheet material and the plurality of pores when formed (See Abstract), and wherein the feedback circuit (Fig. 6a, Ref. 35) provides feedback to the light source (Fig. 6a, Ref. 31) to discontinue direction of light when at least one predetermined criteria of the plurality of pores has been achieved (Col. 7, lines 33-43).

**Claim 33**

Inagawa et al. ('280) further discloses the feedback circuit comprises an electronic circuit (Fig. 6a, Ref. 35).

**Claim 36**

Inagawa et al. ('280) further discloses an illuminated lens (Fig. 6a, Ref. 34) adapted to be placed in the directed light between the light source (Fig. 6a, Ref. 31) and the sheet material (Fig. 6a, Ref. 36).

**Claim 38**

Inagawa et al. ('280) further discloses the light detector comprises a photodiode (Col. 7, lines 33-38).

**Claim 39**

The reference of Inagawa et al. ('280) further discloses the light source is a LASER (Col. 3, lines 60-65).

**Claim 40**

Inagawa et al. ('280) the LASER is a UV LASER (Col. 3, lines 60-65).

**Claim 48**

Inagawa et al. ('280) discloses a light source (Fig. 6a, Ref. 31) capable of directing light onto the surface of a material (Fig. 6a, Ref. 36) in an amount sufficient to drill at least one pore in the material (See Abstract); a feedback control means (Fig. 6a, Ref. 35) connected to the light source (Fig. 6a, Ref. 31) for discontinuing the direction of light a light detector (Fig. 6a, Ref. 40) connected to the feedback control means (Fig. 6a, Ref. 35), adapted to be positioned adjacent the material and on a side of the membrane material which is opposite the surface at which the light is directed (See Fig. 6a), and adapted to analyze light passing through the material and the at



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least one pore (See Abstract), when formed; and wherein the feedback control means discontinues the direction of light when at least one predetermined criterion of the at least one pore has been met (Col. 7, lines 33-43).

**Claim 51**

Inagawa et al. ('280) discloses an illuminated lens (Fig. 6a, Ref. 34) adapted to be placed in the directed light between the light source (Fig. 6a, Ref. 31) and the material (Fig. 6a, Ref. 36).

**Claim 52**

Inagawa et al. ('280) discloses the connection between the light detector (Fig. 6a, Ref. 40) and the feedback control means comprises an electronic circuit (Fig. 6a, Ref. 35).

**Claim 53**

Inagawa et al. ('280) further discloses the light detector comprises a photo-diode (Col. 7, lines 33-38)

**Claim 54**

The reference of Inagawa et al. ('280) further discloses the light source is a LASER (Col. 3, lines 60-65).

**Claim 55**

Inagawa et al. ('280) further discloses the LASER is a UV LASER (Col. 3, lines 60-65).

***Claim Rejections - 35 USC § 103***

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 4-5, 10-11, 14, 16-19, 34-35, 37, 49-50 are rejected under 35 U.S.C. 103(a) as being unpatentable over Inagawa et al. ('280).

**Claim 4 & 10, 19**

Inagawa et al. ('280) discloses the claimed invention except for a plurality of sheets and repeating the directing, forming, detecting, and analyzing for each sheet. It would have been obvious to one having ordinary skill in the art at the time the invention was made to combine Inagawa et al. ('280) with plurality of sheets since it was well known in the art that using a production type method of conveying a plurality of sheets increases the production capacity and speed to which they are manufactured, therefore saving cost on manufactured items.

**Claim 5**

Inagawa et al. ('280) discloses the claimed invention except for the hole diameter is less than 100 microns. It would have been obvious to one having ordinary skill in the art at the time the invention was made to combine Inagawa et al. ('280) with hole diameter less than 100 microns since it was well known in the art that a laser can be focused to an array of diameters by the use of optical elements, therefore allowing a variety of hole diameters to fit a design specification.

**Claim 11**

Inagawa et al. ('280) discloses the claimed invention except for the material is a polymer film. It would have been obvious to one having ordinary skill in the art at the time the invention was made to combine Inagawa et al. ('280) with the polymer film since it was well known in the art that using a polymer film on a circuit board since circuit board are made up of many different layers.

**Claim 14**

Inagawa et al. ('280) discloses a means for directing light (Fig. 6a, Ref. 32) onto a sheet of material (Fig. 6a, Ref. 36) and forming a pore array therein (See Abstract), the pore array comprising a plurality of pores (See Abstract, "a method of forming holes"), said means including a light source (Fig. 6a, Ref. 31) associated with a beam splitter; a means for detecting light passing through the pores of the pore array as the pores are formed (Fig. 6a, Ref. 40); a means for analyzing the detected light to determine if the pores meet a criteria (Fig. 6a, Ref. 5); and a means for continuously repositioning sheets relative to the means for directing light (Fig. 6a, Ref. 7).

Inagawa et al. ('280) discloses the claimed invention except for a beamsplitter. It would have been obvious to one having ordinary skill in the art at the time the invention was made to combine Inagawa et al. ('280) with a beamsplitter since it was well known in the art that using a beamsplitter allows the device to direct light without interfering with other optical elements, therefore increasing the sensitivity of the measurement.

**Claim 16**

Inagawa et al. ('280) discloses means for analyzing detected light comprises a

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microprocessor (Fig. 6a, Ref. 5).

**Claim 17 & 37**

Inagawa et al. ('280) discloses the claimed invention except for the beamsplitter is a mask and lens combination and a diffractive optic element. It would have been obvious to one having ordinary skill in the art at the time the invention was made to combine Inagawa et al. ('280) with optical element combination since it was well known in the art that using different combination of optical elements increases the controllability of the light, therefore increasing the precision of the device.

**Claim 18**

Inagawa et al. ('280) further discloses the means for detecting light is selected from the group consisting of a photodiode (Col. 7, lines 33-38).

**Claim 34 & 49**

Inagawa et al. ('280) discloses the claimed invention except for a shutter. It would have been obvious to one having ordinary skill in the art at the time the invention was made to combine Inagawa et al. ('280) with a shutter since it was well known in the art that that using a shutter completely blocks light output, therefore increasing the reliability that light is not going to interfere with the optical elements.

**Claim 35 & 50**

Inagawa et al. ('280) discloses the claimed invention except for a homogenizer. It would have been obvious to one having ordinary skill in the art at the time the invention was made to combine Inagawa et al. ('280) with the homogenizer since it was well known in the art that a homogenizer produces sharper light, therefore increasing the sensitivity of the measurement.

*Allowable Subject Matter*

7. Claims 41-47 are allowed over the prior art of record.
8. Claims 15, 24-25 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

9. The following is a statement of reasons for the indication of allowable subject matter:

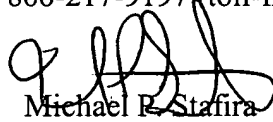
Regarding claim 41, the prior art fails to disclose or make obvious a method for the fabrication of an array of pores having the steps of detecting the light transmitted through the pores wherein the detected light demonstrates the number of the pores; and stopping the directing of light when the transmitted light demonstrates that the pores are of the correct number, and in combination with the other recited limitations of claim 41.

Regarding claim 42, the prior art fails to disclose or make obvious a method of simultaneously manufacturing and inspecting a plurality of pores having the steps of directing light energy on a surface of a material in an amount sufficient to create the plurality of pores in the material; detecting light passing through the plurality of pores opposite the surface at which the light energy is directed; and analyzing the detected light to determine at least one criterion of the plurality of pores being formed, and in combination with the other recited limitations of claim 42. Claims 43-47 are allowed by the virtue of dependency on the allowed claim 42.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael P. Stafira whose telephone number is 571-272-2430. The examiner can normally be reached on 4/10 Schedule Mon.-Thurs..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gregory Toatley can be reached on 571-272-2800 ext. 77. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

  
Michael P. Stafira  
Primary Examiner  
Art Unit 2877

September 23, 2005